

Decontamination/Microbiology –Workbook Segment 1 Part A

Objectives:

- To train sterile processing (CS) technicians protocol and procedures in the decontamination process
- To provide standards and guidelines for tasks performed when processing items
- To provide information about how microbiology applies to process duties in the decontamination process
- To further understanding of the importance of applying protective measures to daily duties

By the end of this lecture, you should be familiar with:

- Basic pathogenic microorganisms
- Bacteria
- Viruses
- Prions
- Preventative safety measures

This lecture will walk through the 16 steps the CS technician will follow at the beginning and throughout each shift in the decontamination area:

Part A of Decontamination/Microbiology workbook

1. *Clean and disinfect items and work spaces.*
2. *Assess equipment needed for the day's work*

Part B of Decontamination/ Microbiology workbook

- 1 Wash hands.
- 2 Don Personal Protection Equipment

Part C of Decontamination/ Microbiology workbook

- 1 Receive items into decontamination area
- 2 Fill sink with detergents and disinfectants
- 3 Sort the containers lids from the instrument containers
- 4 Sort items
- 5 Soak items
- 6 Submerge all immersible items during manual and mechanical cleaning
- 7 Manually wash
- 8 Mechanically wash
- 9 Inspect and brush items that have visible bioburden
- 10 Rinse all items
- 11 Wash the mesh basket
- 12 Place items in mesh basket

The Process

Part A Step One: Clean and Disinfect Items and Work Spaces

Topics covered:

- What decontamination is
- What bacteria are
- How microorganisms multiply
- The chain of infection
- The governing bodies and their roles

Key learning points:

- Governing bodies and the roles of each
- Decontamination definition
- Technician to understand that decontamination is the first line of defense against infections.
- To understand bacteria types, key points of each and the conditions for their growth
- To understand facts of CJD
- A major role of the CS technician is to break the chain of infection.
- Stationary equipment and all horizontal surfaces and sinks should be cleaned at the beginning of each shift and throughout each shift.

The Central Sterile (CS) professional can potentially be exposed to microorganisms – “bugs” of microscopic size, encompassing bacteria, fungi, protozoa and viruses.

How do you, the Central Sterile Professional, keep yourself, your co-workers and your patients safe? Through decontamination – the act that renders contaminated items safe to handle by those wearing PPEs. Decontamination, according to the Association for the Advancement of Medical Instrumentation (AAMI), is the first line of defense against infection which begins at the point of use.

Other agencies and governing bodies to be aware of:

- The Environmental Protection Agency (**EPA**) is an agency of the federal government of the United States charged with protecting human health and safeguarding the natural environment: air, water, and land
- The Food and Drug Administration (**FDA**) is an agency of the United States Department of Health and Human Services responsible for regulating food, dietary supplements, drugs, biological medical products, blood products and medical devices.
- The National Institute for Occupational Safety and Health (or **NIOSH**) is the United States federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. NIOSH is part of the Centers for Disease Control and Prevention (CDC) within the US Department of Health and Human Services.
- The Joint Commission (**JCAHO**)^[1] (20) is a United States-based non-profit organization formed in 1951 with a mission to maintain and elevate the standards of health care delivery through evaluation and accreditation of health care organizations.
- Association for the Advancement of Medical Instrumentation (**AAMI**) is an alliance of departments to assist in the development, evaluation, acquisitions, use and maintenance of medical devices and instrumentation.
- The United States Occupational Safety and Health Administration (**OSHA**) is an agency of the United States Department of Labor. Its mission is to prevent work-related injuries, illnesses, and deaths by issuing and enforcing rules (called standards) for workplace safety and health. (21)

AAMI suggested protocol for the CS department:

- Clean all horizontal surfaces weekly if not every shift
- Damp mop daily
- Clean walls and storage areas routinely

How do microorganisms multiply?

Microorganisms multiply by binary fission – a form of asexual reproduction which:

- Does not involve meiosis
- Requires only one parent
- Is common to one-celled organisms

► A goal of the CS technician is to reduce the reproduction process and maintain an environment in which it is difficult for microorganisms to survive.

Bacteria can grow and divide rapidly and double in population every 9.8 minutes under these conditions: (4)

- Moisture
- Food
- Warmth
- Slightly alkaline environment
- Free oxygen/non-free oxygen
- Indirect light
- No accumulation of waste

What is the CS technician's role in deterring the growth of microorganisms?

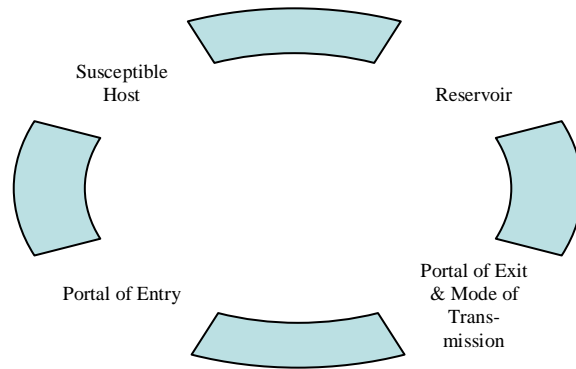
A major role of the CS is to ensure the chain of infection is broken. Cleaning and disinfecting tasks are imperative to breaking the chain and deterring cross contamination

- Cross Contamination:
 - A major cause of a hospital-acquired infection known as nosocomial infections
 - Recontamination (5)
 - Microorganisms that have moved from one host to another

To deter cross contamination and nosocomial diseases and prevent bioburden build-up, the CS technician must:

- Use proper hand washing – the best way to prevent a nosocomial infection
- Maintain good hygiene
- Adhere to work flow patterns
- Clean and disinfect properly
- Maintain barriers to contamination
- Follow standard precautions
- Ensure the sterility of item/s processes
- Correctly handle contaminated and sterile items when transporting

How are microorganisms transferred in the chain of infection?



The chain of infection:
The process of the chain of infection is described by the following outlined diagram.

Reservoir – source that allows for microbial growth:

- Equipment
- Staff member
- Patient

Portal of Exit – means by which organisms leave one host:

- Blood
- Skin
- Mucous membranes
- Gastrointestinal and genitourinary tracts

Mode of Transmission – routes by which microorganisms are transmitted in hospitals; the same microorganism may be transmitted by more than one route:

- **Contact transmission**
 - Direct-contact transmission
 - involves a direct body surface-to-body surface contact or by mucous membranes transfer of microorganisms between a susceptible host and an infected person, carries pathogens from the blood of one person to another
 - Indirect-contact transmission
 - Involves contact of a susceptible host with a contaminated object
- **Vector**
 - An organism that does not cause disease itself but spreads infection
 - For example, diseases that are not usually transmitted directly by blood contact but rather insects like ticks, fleas, and lice
- **Fomite**
 - Any inanimate object capable of carrying infectious organisms and transferring them from one individual to another,
 - For example: Cloth, table top, sink or faucet in the decontamination area